ENTREPRENEURSHIP DEVELOPMENT PROGRAMS-EDPS: THE GEFEI CASE IN THE OIL INDUSTRY

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Abstract: The present economic scenario, stimulated by deregulating macroeconomics politics and consequently the market liberation, has generated the competitive environment intensification at national and global levels, in several business market sectors. Such scenario has demanded a professional development that beyond technical skills needs managerial and personal attributes. Currently and in the near future, a significant employment rate growth would come from support for local innovation, research and technological development (Endogenous Development). Such context will depend from local capacity, work forces, institutions and other manufacturing factors, particularly in terms of the productivity, flexibility and adaptability. To keep competitiveness, the work force will need to have very diversified and high quality of skills, which includes fast adaptability of people to new working practices and organizations structures. In spite of this, it is observed in the literature and also in organizations, certain dissatisfaction towards traditional educational models applied by formal educational institutions (universities, technical schools, etc.). This article, fruit of ten years of work, developed a model proposition for the development, implementation and analysis of Entrepreneurship Development Programs-EDPs. Firstly it succinctly shows the Entrepreneurship Education theory foundation defining key concepts (Entrepreneurship Education, Entrepreneurs, etc.) and aims of skills development. After is described the research model utilized to understand all the pertaining components for the creation of EDPs: External Environment (Customers and Networks); Internal Environment (Professors, Infra-structure, and EDP); Evaluation; and Control. Finally is presented an EDP developed by UNIFEI, its application and current results. The Entrepreneurship For All Program-EFA, is a partnership between Schlumberger, a leading company in the oilfield services sector and the GEFEI Center (*Gestão Empresarial, Formação Empreendedora & Intra-empreendedora*) from Universidade Federal de Itajubá-UNIFEI. After six years of implementation the short and medium term results like attrition rate, career development and promotion, are already considered very positive and successful for the company's human resources development objectives.

Key words:Education, Development, Entrepreneur, Entrepreneurship, and Entrepreneurship Educating,

1. INTRODUCTION

The nineties and the beginning of the 21st century have been marked by great market changes, acceleration of the innovation process, intense global competition and broad access to information. Such scenario culminates with the unemployment intensification that is considered one of the major problems faced by the capitalist economies. The great technological changes implemented by the manufacturing sector had generated immense improvement of quality and productivity; however, many job positions were extinguished. Moreover, many new opened employment positions can not be filled quickly due to the lack of the demanded professional profile in the market.

Oliveira (1986, p. 23) affirms that exist one gap between the scientific-technological advances and the group organizations or social entities capabilities to deal with the big global changes. In a economic-social development project, at local or national level, the education role is of the most important. Such development and progress are not sole determined by proper decisions, but as well by its positioning in the business relations set and the global economic investments (Fowler, 1997, p.9)

According with Benett (1992, p. 17), the key strategy formation elements of a country to face the new global challenges require to pay attention in several issues, such as:

- Link between the production and employment should gradually decrease with the launch of new manufacturing technologies. Therefore, such investment budgets, probably will not result in employment term gains;
- Programs to assure and increase local work placements should be implemented and will demand complexes associations and agreements between local small, big national and international businesses;
- In the future, a significant employment growth could come from local incentives for innovation, technological development an research, that is, *Endogenous Development*, Such development

will depend from local innovation capabilities, workforce, from the institutions and others production factors, particularly in terms of productivity, flexibility and adaptability;

- High workforce quality and diversified skills will be demanded fur such development;
- Fast individuals adaptability to the new work practices, new organizations models and governments are competitiveness demands.

It is observed that several global challenges foreseen from the author, cited above, were previously mentioned by others, from them are: Naisbitt (1979); Tofler (1997). They comment that the success of an economy in such environment depends essentially from the required capabilities to overcome them. Such capabilities, as referred, include economic, employment, education, innovation, research, development issues and local conditions.

From the preceding description, this article aim to present the use of Entrepreneurship Education as a possible instrument, from the education dimension, for diminishing such gap between the scientific-technologic advances with the educational organizations and consequently support in the search to win the global challenges.

Firstly, will be introduced the theoretic fundaments of Entrepreneurship Education and Entrepreneurship Development Programs-EDPs. Secondly, is proposed an EDP creation model and finally is presented the application of the referred model with its current results in to programs developed by the entrepreneurship center-GEFEI, from the Universidade Federal de Itajubá-UNIFEI.

2. PROBLEM FORMULATION

From the education point of view, under the prism of the capability of a nation to win the global challenges, it is observed the companies, employment generators, are having great absorption difficulties of human resources formed by the formal teaching organizations. As Tofler (1997) emphasizes: *I really would say that none educational institution can set reasonable objectives or achieve effective work, while its members – from the rector or director to the most recent hired professor for the body, and also students – do not submit theirs ideas in respect to tomorrow to a critical analysis. This is due to the collective or shared image from the future that will dictate the decision taken by the institution* (p. 32).

According with this same author, the majority of our political leaders have in mind one permanent industrial society, that is, what was yesterday is today and will be tomorrow. It is clear that, nowadays, this is less appropriate, motivated by the great acceleration of the changes: technological, economical, cultural and social. In the educational institutions, generally speak about Automation, Subcontracting, Quality, Productivity, pressured by the productive sector, but do not discuss how such issues will affect the Human Resources that they prepare to these new type of organizations. The subcontracting idea, which recommends ordering services instead of doing yourself, has become a great trend. Therefore, more people are working for themselves, opening their own businesses, or working in small firms with fewer employees.

It is observed that the education has difficulties, if not to be superior, at least keep at the same fashion of development in relation to other sector of the society. Most of the time, the attempts of changes have emphasized curricular contents, disregarding teaching and learning methodologies. This fact was reported by Comini (1994), were in a total of 71 Brazilian Business Schools, 91% adopt as the first strategy, for teaching improvement, the review of the curricular structure and didactic methodologies appears only in forth place (p. 8). Also the author reports in her work that entrepreneur's spirit (capability to anticipate changes, action and decision initiatives), contextual competence (capability to understand the social, politic, economic, cultural environments in which the manager is inserted), are the main traits of the business graduate profile demanded for the present and future workplace.

Bygrave (1994) presents the importance of Entrepreneurship in the United States of America, saying that Entrepreneurship is that they do better than any other nation; this is justified by him throughout the number of high technology firms created in the last few years (p. ix).

Given the entrepreneurs stereotype, there is no surprise in the growing number of fresh outs in several professional areas not being hired or filling positions according with their qualifications.

A very important point is that, based on entrepreneurs characteristics, traditional teaching methodologies do not apply to Entrepreneurship. The traditional education, in all levels, is delivered for training in a pre-established structure, where someone supplies guidelines about how, what, where and when to do something. It is necessary train potential autonomous and creative entrepreneurs, as students, that will create and manage their own employments. They need more practical training about life, resources management and businesses (Gibb, 1993, p. 2).

Regarding such scenario, there are successful experiences and even specialized excellence centers for entrepreneurs' development. As an example, can be cited: Babson College, in the United States; DUBS-Durhan University Business School, in England.

In spite off the relative great diffusion of business venture creation courses, in international level, it is detected a great lack of studies that analyze the main conceptual, operational and even results issues related to these programs. It is known that the majority of them is recent and that suffer typical restriction of pioneers actions: Financial, Methodological, Control and Medium or Long Term Evaluation Mechanisms (Johnson, 1983, p. 136). Brockhaus (1992) reinforces this opinion by expressing the need for research methodologies to measure the several aspects of Entrepreneurship Education (p. 6).

3. DEFINITIONS

3.1. Entrepreneur

This role, directly linked with the business creation and management, has promoted the growing production of studies (Jarilo, 1985, p. 14). Nevertheless, Filion (1991, p. 10) affirms that has not achieved yet a consensus on an single definition commonly accepted to the Entrepreneur term. Such is the complexity of the subject that the object became research topic to the author (Filion, 1991, p. 64). Similarly, Hornaday (1982) presents nineteen characteristics and attributes frequently mentioned on researches made about successful Entrepreneurs.

In this article was taken, as definition, that entrepreneur is known as a person that creates and manages endeavors. Therefore, besides creating and directing their own businesses, entrepreneurs can be found in other kind of organizations such as: communitarian associations, such as clubs and cooperatives. Consequently, the entrepreneurship essence is not necessarily in the search for businesses that generate profit, but in the creation and management of projects that require acquisition and application of human, physical, financial resources in relation to specific aims. Such objectives can be personal or not.

3.2. Entrepreneur Potential (Entrepreneurial)

A potential entrepreneur is in a individual that presents latent traits and attributes on an Entrepreneur and can come to create and manage endeavors. Such latent traits and attributes are not necessarily seen only in people considered successful entrepreneur. Stokes (1995) says that some traces and personal characteristics must be considered essential to an successful entrepreneur: Need of Achievement; Determination; Moderate Risk Assumption; Independence; and Innovation (p. 34). Such attributes are considered fundamental in the formation of the professional for the present work market (Vermaas & Crepaldi, 1997).

3.3. Entrepreneurship

Gibb (2002) arguments that the most useful way for defining Entrepreneurship, in a educational context, must be done in terms of its expressed behavior throughout certain Entrepreneur's attributes and skills to create and manage projects. Strictly speaking, an entrepreneur does not exist without entrepreneurship and vice-versa.

3.4. Education

Teixeira (1981) defines education as a concept related to de human development, in his/her life journey, since the birth until the death. Refers to multiple ways of a social organization, that enables personal transformation in order to achieve higher grades of well being, and personal accomplishment. Besides this, education designates the knowledge area, as well professional performance. The author also comments that from a technical perspective, education can be conceived as a process for creating a seizing learning situation. Such situations are closely linked with the person that created of experienced it (p. 9).

3.5. Development

It is a formal education process, that creates and seizes learning situations in order to develop aimed traits and skills to achieve certain teaching objectives. From the education concept, it is possible to conclude that the situations are closely linked with the person that created is (professor, trainer, etc.) and the one that live it (student, apprentice, etc.).

3.6. Entrepreneurship Education (*Educação Empreendedora*)

The term *Educação Empreendedora*, in Portuguese, comes from the terms Entrepreneurship Education and Enterprise Education in English. Entrepreneurship Education programs launched in the USA have as main objective the creation of new ventures and maybe in order to obtain his/her own business. Therefore, they emphasize the skills and technical knowledge oriented to businesses that envision financial profit. Enterprise Education programs ran in England aim the entrepreneur's individual skills and attributes development and, not necessarily, looking for a profitable business creation (Fowler, 1994).

In order to act as a business entrepreneur, Lenko (1995) mentions that it is need to develop three sets of qualities:

a) **Attitude and Values** , as opportunity recognition, self-confidence and challenge conventional wisdom;
b) **Human Relation Skill**, as communication, creative and critical thought, take decisions, solve managerial and organizational problems;
c) **Economics Principles Knowledge,** as the business world, marketing, manufacturing, finance, legal issues, and the use of technological changes (p. 19).

Likewise, Cotton (1990, p. 89). Presents a project success model and/or "luck" that demands three classes of skills: a) Technical; b) Managerial and c) Entrepreneurial. The National Training Laboratories presents studies related with knowledge retention (Figure-1: Knowledge Retention Average)

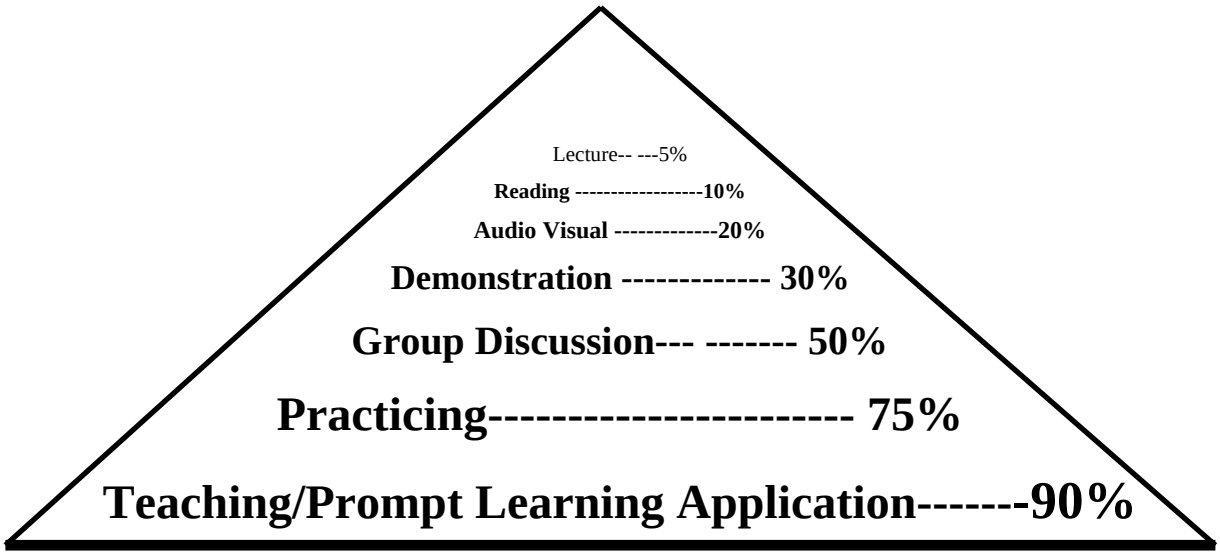

Figure-1: Knowledge Retention Average.

Source: ("*National Training Laboratories, Bethel Maine*").

Such researches indicate that the most effective learning ways are discussions, actions and skills transfer to practical situations. Contrary to the traditional manners of learning that emphasize the knowledge as the cornerstone to prepare the students to life, entrepreneurship education focuses the skills development, but in a context that also promotes knowledge acquisition. Entrepreneurship Education is a singular model, because the business simulation is in the learning process.

According to Cotton (19990, p. 6) the skills associated with entrepreneurs can be developed throughout experimental learning participation, as well the set of competencies, attitudes, characteristics, knowledge and understanding. **Entrepreneur is a person that creates and manages projects**. From this definition, Entrepreneurship Education utilizes real projects and methodologies that search for the teaching and/or technical knowledge transference as a way to stimulate development personal skills demanded by the market work, that are also meet in well succeed entrepreneurs. These personal skills were organized in five set denominated key-qualifications classified as: a) Work organization and execution; b) Interpersonal communication; c) Self development; d) Responsibility and autonomy; and e) Withstand pressure (Vermaas & Crepaldi, 1997).

4. EDPs- ENTREPRENEURSHIP DEVELOPMENT PROGRAMS

As Entrepreneurship education can be applied to develop potential entrepreneurs, other question to be answered, relies on how to develop programs or courses for such objective, that is, to develop potential entrepreneurs.

Stevenson (1990, p. 2) comments that, in order to develop an Entrepreneurship education Program, the experience shows that should balance the curriculum objectives between the offered subjects and the culture development. The Harvard Business School bases on four elements from the pedagogical process:

- Technical knowledge (Finance, Marketing, HR, etc.);
- Skills that are useful to the present environment and skills to gain continuous knowledge about the world changes - *Learn to Learn;*
- Learning alternatives – there is not only one way;
- Attitudes – the potentiality of certain entrepreneurial attitudes can be demonstrated and is up to the individual accepting and develop it in his/her deciding diary.

Such comment agrees with opinions, previously mentioned, related with the individual profile and skills and also can be developed through the entrepreneurship education use.

Hirsrich (1992, p. 36) presents one general model for Entrepreneurship Development Programs (EDPs) creation in universities (Figure-2). While the education, the training and the research are parts of the entrepreneurship education program, operating simultaneously, this model organizes the practical part of the program, consider the most difficulty by the author. When an individual (inventor, entrepreneur) brings idea or skill, the program does the technical evaluation, commercial viability study, product development or modification and evaluations performed by professors and students. The good ideas could become base for a business plan for new enterprise creation and if finance was necessary, if would use fund for small amounts (seed money). All involved participants in the business creation (university, students, inventors, entrepreneurs, etc.) could share the enterprise ownership and consequently the profits of this new venture.

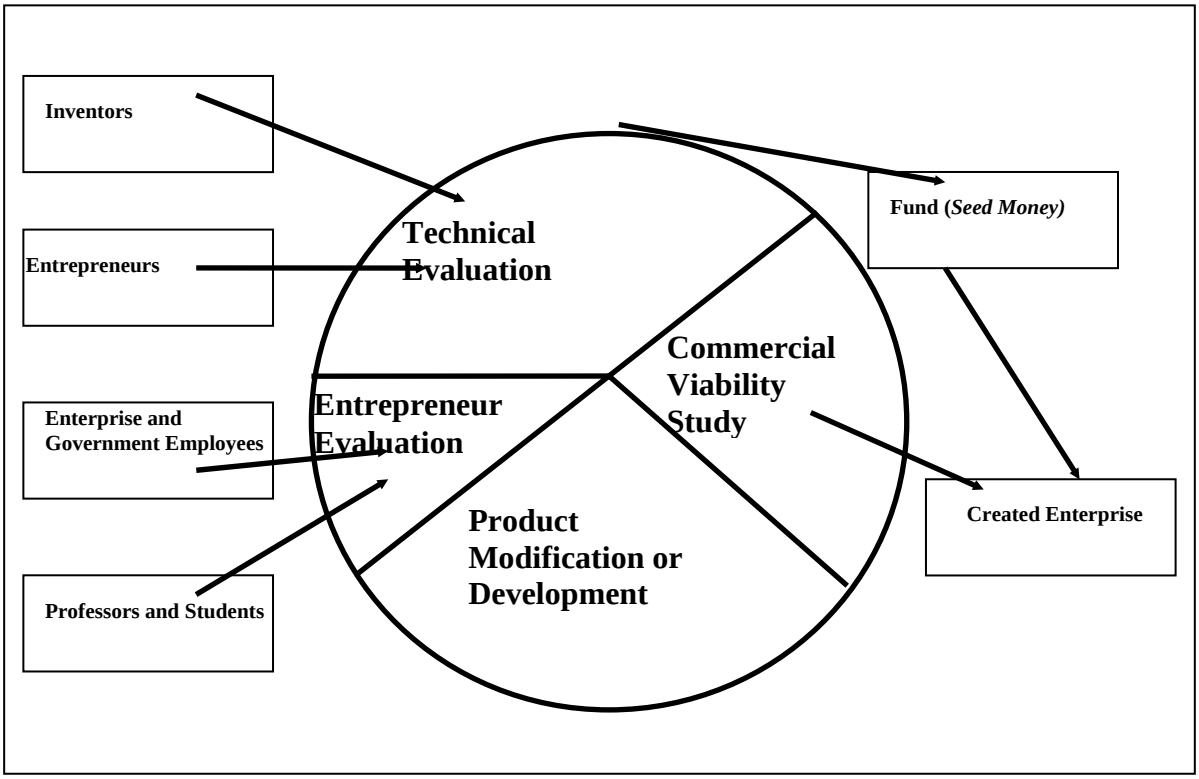

Figure-2: General Model For EDP

Patel (1992, p. 17) comments that the process for the EDP implementation, with sustained base, is defined as the program institutionalization. The process could be initiated by one existent organization or one developed for this proposition with the intervention of the government or one international development agency. Similarly to the ingredients describe by Hirsrich (1992), the author was broader on his suggestions including issues that evolve aspects external to the program organizing institution. Other studies such as: Gibb (1992, p. 7), Abainza (1992) and Jonnisson (1992, p. 100) stress market segmentation for the program, that is, to whom the EDP is aimed.

4. RESEARCH MODEL

The theoretical foundation of the model (Figure-3), is mainly based on existent EDPs proposals or experiences studied during the literature review and the application of it two cases (Fowler, 1997). This model aims understand how the several components of the external environment (clients, networks e local context) and internal environment (the institution with its professors and available infra-structure) interacts, negatively and positively, with the current EDP. Other inquire relates to how the internal and external results are obtained for evaluation and feed-back.

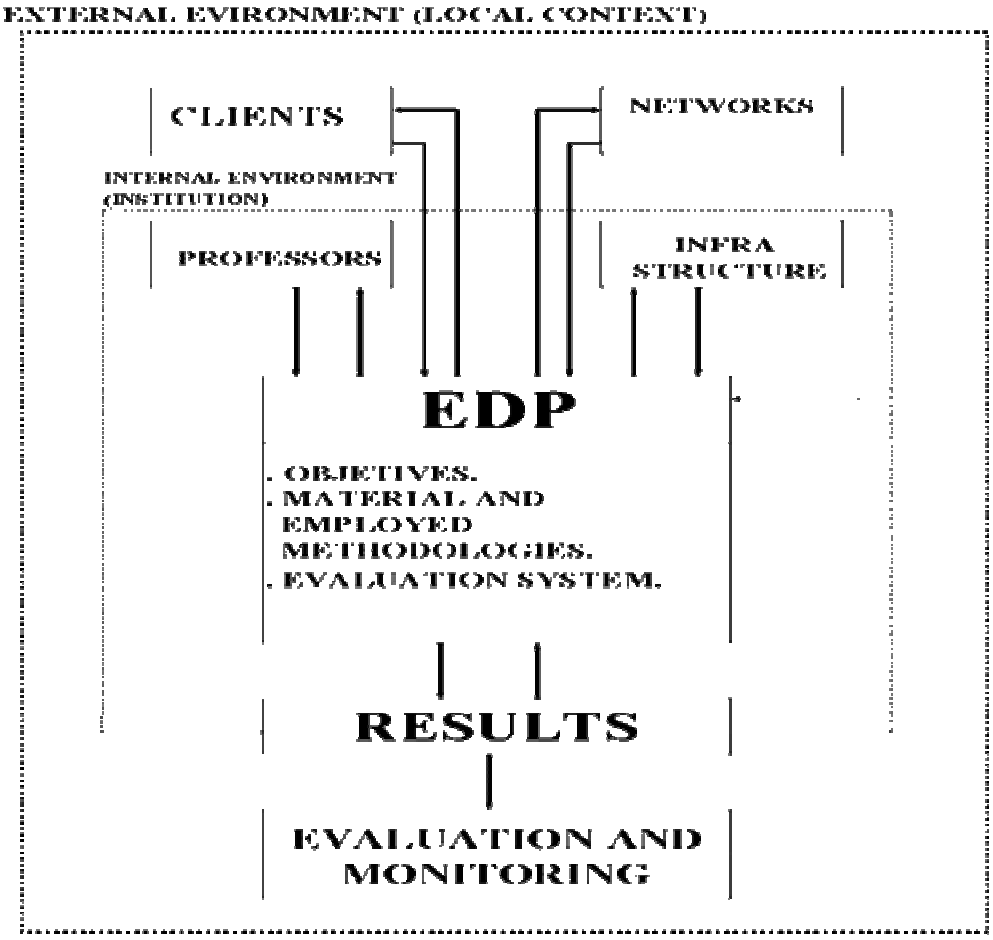

Figura 3 Research Model

The main data and information pertaining to the objectives of this study are obtained through one set of questions oriented by the research model are described as follows:

a) *Local Context* – How was the social-economic situation before the EDP? How the local context did influence the EDP creation? Are there any aspects that were against the EDP development and implementation? Which are they and Why?
b) *Clients* – Who are the potential candidates to participate on the EDP? How are they recruited and selected?
c) *Networks* – Are there some support ways from enterprises, entrepreneurs, government or other institutions?
d) *Professors* – What is the EDP professors' profile? Is there some sort of training for them? How are they recruited and selected for the EDP? How can they cooperate with the EDP? How are they seen by the institution and participants from the EDP? Were there some sorts of barriers from the professors in relation to the EDP? How these barriers were overtaken?
e) *Infra-structure* – What are the (human, material and financial) resources available by the institution for the EDP? How and why did the institution accept support the EDP? What were the barriers faced by the institution due to the EDP? How did it overtake these barriers? Does exist any barrier yet?
f) *Entrepreneurship Development Program* – How the EDP objectives were defined? What are the EDP's objectives? Describe the EDP in terms of contents, methodologies, time and participants evaluation system.
g) *Results* – How old is the EDP? How many people already participated in the EDP? What are the positive and important results obtained by the EDP? How the EDP's results are registered?
h) *Evaluation and Monitoring* – How the EDP is evaluated by the institution and also externally? How did the EDP's egresses and participants evaluated it? How did these evaluations are utilized as feedback?

5. A GEFEI's EDP

From the Entrepreneurship Education conceptualization and research model proposal, presented previously, the Entrepreneurship Center GEFEI (Fowler, 2003) from Universidade Federal de Itajubá-UNIFEI, has launched an EDP customized for an oil field services company. It is presented as follows.

5.1. Entrepreneurship For All-EFA

Developed in partnership with Schlumberger group, the purpose of the *Entrepreneurship For All*-EFA project is better prepare the recently graduated and hired human resources, as well as, those in all hierarchal levels of the organization, through the enhancement of technical, managerial e entrepreneurial abilities. The implementation of the project aims at:

- improving the managerial skills of the new-hire;
- incorporating and developing the entrepreneurial culture;
- engaging the participant in within company context real-life projects;
- continually evaluating the participant in several multi-subject situations;
- introducing to the participants the values and culture of the enterprise;
- strengthening the enterprise X university relationship.

The project is accomplished in 14 weeks, and it proposed the involvement of 12-15 Schlumberger Interns. Some of the activities are performed at UNIFEI and others at the Schlumberger group bases in Brazil (In 2006 the program was successfully introduced in Argentina-Neuquen base with 12 participants).

The first three weeks, which will be at UNIFEI, are for a workshop. This workshop includes topics described in the program and a business idea conception by the students (Project I).

After, 12-15 projects with the couching of UNIFEI Instructors and four management courses will be carried out at Schlumberger location. For the projects there will be three to four groups of four interns each. The management courses will discuss human resources, marketing, finances and operations issues. The program syllabus is described as follows:

Syllabus

Content	Work load
Introduction : Program presentation; Definition of Project I; Creativity activity	4 hours
Workshop Week I, II & III: Overview – PETRA philosophy (2 h);Interpersonal communication – Empathy game; Technique: How to listen (4 h); Communication process components: Ardvark Drawing - Square game (6h); Self-learning technique: How to study / research / Summarize (8h); Group work techniques (developing the 12 personal characteristics); Group work GVGO – Nasa Game (12 h); Problem solving and transference techniques (5h); Business reports (8h) – Learning Test , oral & written communication; Leadership (8h) – Group work, Brainstorming; Vision (8h) – EE Theory EE, Tucker movie, Case Study, GET Test and Vision exercises; Creativity (8h) – *A Snap on the head*, "Scrap" Business; Negotiation e Networking (8h) – XY game, Negotiation techniques, network mapping, network quiz ; Information search & oral and written presentations (8h): Project I advising; Written assignments grading (8h); Project I presentation (8h): Comments and conclusions; One-by-one advising (16h).	116 hours
Project I: Business idea development (simultaneous to the Workshop)	
HR Management:(32 hours by UNIFEI 08 hours by SLB) – HR basic concepts; Schlumberger HR and a practical case.	40 hours
Marketing: (32 hours by UNIFEI 08 hours by SLB) – the marketing role, Marketing B2B, Services Marketing; marketing at Schlumberger and a practical case.	40 hours
Finance: (32 hours by UNIFEI 08 hours by SLB) – Finances and Costs basic concepts; finances at Schlumberger and a practical case.	40 hours
Operations: (32hours by UNIFEI 08 hours by SLB) – Productivity and Quality basic concepts; Operations at Schlumberger and a practical case.	
Projects I, II, III, IV.	

5.1.1. The Projects

They are the core issue of the entrepreneurial development. From the use o real projects, participants are engaged with learning situations that enables the development of traits and attributes demanded in the market. These projects have the time limitation of two week for the results presentation. The evaluation process, besides of the tutors' conclusions, also requires the company management personnel involvement. Some projects titles implement are:

- Electricity consumption reduction study for the bases;
- ISO 14001 evaluation study for one base;

- Software development to support the environmental impacts evaluation of oil rigs;
- Study for people and material logistics improvement;
- Engineers' room new layout proposal;
- People and equipment logistic mapping for one base;
- Methodology development for local suppliers qualification;
- New business evaluation;
- Maintenance equipments plan for one base; and
- Qualification and evaluation of machining services.

5.1.2. Results

In spite of not being the main objectives of the program, in its sixth year, the short term results related with the implementation of numerous projects, has promoted the improvement of several operational processes and consequently productivity gains. These results enables the continuity of the program and therefore allows the evaluation of the main results that are of medium and long term, which refer to participants professional profile development. Although, it is not possible yet to guarantee the success of it, qualitatively, is observed a performance differential between the participants of EFA hired by the company in comparison with the ones that did not take part of the program. This is a fact expressed by several company managers and also observed throughout internal training evaluation offer during their career.

As quantitative measurers, currently, the program has the following numbers:

a) Total participants: 108 interns (72 were hired by the company);

b) Performance at 1st company's internal technical training classification: 1st place: 08; 2nd place: 12; 3rd place: 20; and also 83% of them between the 5 first position;

c) Attrition rate: due to the peculiarities in the oil industry, it is known in the sector the high turnover of employees. The attrition rate is the number that tells the percentage of new hired employee that leaves the company in less than one year. Currently, the attrition rate is 0% (zero percent) for the participants in the program. Comparing with 20% for the industry average, and the high cost of training for new hired, this result is very significant by itself;

d) Carrier promotion: The company has chronologic carrier path, which includes training and promotions, and in spite of the high volume of work demanded in the oil field nowadays, over 85% of the EFA participants are on time with their development and promotion.

6. FINAL COMMENTS AND RECOMMENDATIONS

As previously described, a good project manager competence can not be guaranteed only by the technical skills. Managerial and entrepreneurial skills take part of the ideal professional profile. The formal education institutions must beware that traditional learning and teaching methodologies are not appropriate for developing such skills. Entrepreneurship Education is a possible proposal to face the global challenges and doing so, better prepare individuals for managing projects and possibly stimulate the small businesses creation.

Having said this, educators should have changing agents' role to manage projects in this line. They also should become entrepreneurs of the learning process. Bellow is presented some recommendations made by Filion (1992, p. 12). They are ten steps for an entrepreneurial teaching:

1. *Look how you position as a professor;*
2. *Get to know the inventors and entrepreneurs world. Cultivate Imagination;*
3. *Avoid conformation pressure;*
4. *Reinforce students autonomy and leadership;*
5. *Use real life examples for teaching. In any field;*
6. *Promote students in defining their own situations, problems and visions;*
7. *help the students to get used on identify their own interests and motivate them to learn;*
8. *Have an open attitude in relation the environment;*
9. *Generate opportunities for the students to put their ideas into actions; and*
10. *Become a teacher that offers tailor made education.*

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Firstly, it is important to register the pioneer and innovator spirit of the engineers Jean Moritz, currently Schlumberger World Wide Personnel Manager for Testing (at the start of the program, in 2001, Recruiter for Latin America South) and Carlos Duarte, currently Schlumberger World Wide R&D Centers Manager (at the start of the program, in 2001, Geomarket Manager for Latin America South). Without them, the program would never be implemented.

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Abstract: The present economic scenario, stimulated by deregulating macroeconomics politics and consequently the market liberation, has generated the competitive environment intensification at national and global levels, in several business market sectors. Such scenario has demanded a professional development that beyond technical skills needs managerial and personal attributes. Currently and in the near future, a significant employment rate growth would come from support for local innovation, research and technological development (Endogenous Development). Such context will depend from local capacity, work forces, institutions and other manufacturing factors, particularly in terms of the productivity, flexibility and adaptability. To keep competitiveness, the work force will need to have very diversified and high quality of skills, which includes fast adaptability of people to new working practices and organizations structures. In spite of this, it is observed in the literature and also in organizations, certain dissatisfaction towards traditional educational models applied by formal educational institutions (universities, technical schools, etc.). This article, fruit of ten years of work, developed a model proposition for the development, implementation and analysis of Entrepreneurship Development Programs-EDPs. Firstly it succinctly shows the Entrepreneurship Education theory foundation defining key concepts (Entrepreneurship Education, Entrepreneurs, etc.) and aims of skills development. After is described the research model utilized to understand all the pertaining components for the creation of EDPs: External Environment (Customers and Networks); Internal Environment (Professors, Infra-structure, and EDP); Evaluation; and Control. Finally is presented an EDP developed by UNIFEI, its application and current results. The Entrepreneurship For All Program-EFA, is a partnership between Schlumberger, a leading company in the oilfield services sector and the GEFEI Center (*Gestão Empresarial, Formação Empreendedora & Intra-empreendedora*) from Universidade Federal de Itajubá-UNIFEI. After six years of implementation the short and medium term results like attrition rate, career development and promotion, are already considered very positive and successful for the company's human resources development objectives.

Key words: Education, Development, Entrepreneur, Entrepreneurship, and Entrepreneurship Educating,

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